

What is claimed is:

1. An isolated polynucleotide comprising:

a) a fragment of at least 20 contiguous nucleotides of a bovine genome, or

c) a complement of a);

wherein the isolated polynucleotide of a), or b), comprises a nucleotide occurrence of a single nucleotide polymorphism (SNP) associated with a trait, wherein the SNP is about 500,000 or less nucleotides from position 300 of any one of SEQ ID NOS:19473 to 21982, and wherein the isolated polynucleotide is less than or equal to about 500,000 nucleotides.

2. The isolated polynucleotide of claim 1, wherein the SNP corresponds to a position that is about 100,000 or less nucleotides from position 300 of SEQ ID NOS:19473 to 21982.

3. The isolated polynucleotide of claim 1, wherein the SNP corresponds to a position that is about 10,000 or less nucleotides from position 300 of SEQ ID NOS:19473 to 21982.

4. The isolated polynucleotide of claim 1, wherein the SNP corresponds to a position that is within any one of SEQ ID NOS:24493 to 64886.

5. The isolated polynucleotide of claim 1, wherein the SNP corresponds to position 300 of SEQ ID NOS:19473 to 21982.

6. The isolated polynucleotide of claim 1, wherein the polynucleotide comprises 50 contiguous nucleotides of SEQ ID NOS:24493 to 64886.

7. The isolated polynucleotide of claim 1, wherein the polynucleotide comprises 100 contiguous nucleotides of SEQ ID NOS:24493 to 64886.

8. The isolated polynucleotide of claim 1, wherein the polynucleotide comprises 50 contiguous nucleotides of SEQ ID NOS:19473 to 21982.

9. The isolated polynucleotide of claim 1, wherein the polynucleotide comprises 100 contiguous nucleotides of SEQ ID NOS:19473 to 21982.

10. The isolated polynucleotide of claim 1, wherein the polynucleotide further comprises a detectable label at a position corresponding to position 300 of any one of SEQ ID NOS:19473 to 21982.

11. An oligonucleotide that binds to any one of SEQ ID NOS:19473 to 21982, wherein the oligonucleotide is between 10 and 50 nucleotides in length, and wherein the oligonucleotide comprises at least 10 contiguous nucleotides of SEQ ID NOS:21983 to 24492.

12. The oligonucleotide of claim 11, wherein the oligonucleotide is at least 15 nucleotides in length.

13. The oligonucleotide of claim 12, wherein the oligonucleotide binds to a region that comprises position 300 of any one of SEQ ID NOS:19473 to 21982.

14. The oligonucleotide of claim 12, wherein the oligonucleotide comprises at least 15 nucleotides of any one of SEQ ID NOS:21983 to 24492.

15. The oligonucleotide of claim 12, wherein the oligonucleotide is any one of SEQ ID NOS:21983 to 24492.

16. A primer pair that binds to a first target region and a second target region of SEQ ID NOS:24493 to 64886, wherein the a first primer of the primer pair and a second primer of the primer pair are at least 10 nucleotides in length and bind opposite strands of the target region, and prime polynucleotide synthesis from the target region in opposite directions across position 300 of SEQ ID NOS:19473 to 21982.

17. The primer pair of claim 16, wherein the primer pair bind to a region within any one of SEQ ID NOS:19473 to 21982.

18. An isolated oligonucleotide comprising 10 nucleotides, that selectively binds to a target polynucleotide of SEQ ID NOS:19473 to 21982, wherein a terminal nucleotide of the isolated oligonucleotide binds to position 299, 300, or 301 of any one of SEQ ID NOS:19473 to 21982.

19. The isolated oligonucleotide of claim 18, wherein the oligonucleotide is at least 15 nucleotides in length.

20. The isolated oligonucleotide of claim 18, wherein the terminal nucleotide binds to position 300 of any one of SEQ ID NOS:19473 to 21982.

21. An isolated oligonucleotide pair effective for determining a nucleotide occurrence at a single nucleotide polymorphism (SNP) corresponding to position 300 of any one of SEQ ID NOS:19473 to 21982, wherein each isolated oligonucleotide comprises at least 5 nucleotides from SEQ ID NOS:19473 to 21982 and wherein the terminal nucleotide of each oligonucleotide pair is complementary to a different nucleotide at position 300 of any one of SEQ ID NOS:19473 to 21982 or a complement thereof.

22. An isolated vector comprising a polynucleotide of claim 1.

23. An isolated cell comprising the vector of claim 22.

24. An isolated polynucleotide comprising:

a) a polynucleotide that is at least 20 nucleotides in length and is at least 90% identical to a fragment of at least 20 contiguous nucleotides of a bovine genome; or

b) a complement of a),

wherein the fragment of at least 20 contiguous nucleotides of the bovine genome comprises a nucleotide occurrence of a single nucleotide polymorphism (SNP) that corresponds to position 300 of any one of SEQ ID NOS:19473 to 21982.

25. The isolated polynucleotide of claim 24, wherein the isolated polynucleotide is at least 25 nucleotides in length.

26. The isolated polynucleotide of claim 24, wherein the isolated polynucleotide is at least 90% identical to a fragment of at least 20 contiguous nucleotides of any one of SEQ ID NOS:19473 to 21982.